

IN THE CLAIMS:

Please substitute the following claims for the same-numbered claims in the application:

1. (Currently Amended) A method of detecting abnormal plasma discharge in a chamber, said method comprising:

providing an input signal to said chamber; and

monitoring impedance of said chamber; ; and

~~wherein an abrupt change in said impedance indicates detecting whether an abnormal plasma discharge exists in said chamber by detecting an abrupt change in said impedance.~~

2. (Original) The method in claim 1, wherein said input signal comprises a ramped signal.

3. (Original) The method in claim 1, wherein said ramped signal includes one of a step ramped signal and a smooth ramped signal.

4. The method in claim 1, wherein said input signal comprises a radio frequency (RF) signal.

5. (Original) The method in claim 1, wherein said impedance indicates the voltage of the chamber.

6. (Original) The method in claim 1, wherein said abrupt change in said impedance comprises an abrupt drop in peak-to-peak voltage of said chamber.

7. (Currently Amended) The method in claim 1, wherein said abrupt change comprises a drop in peak-to-peak voltage of greater than 5%.

8. (Original) The method in claim 1, wherein said process of providing said input signal uses electrical contacts connected to said chamber and said process of monitoring said impedance measures impedance of said electrical contacts.

9. (Original) The method in claim 1, wherein said abnormal plasma discharge comprises plasma leakage.

10. (Original) The method in claim 9, wherein said plasma leakage comprises formation of a region of secondary plasma in a location different from a primary plasma formation location.

11. (Original) A method of detecting plasma leakage in a reactive ion etching (RIE) chamber, said method comprising:

providing an input signal to said chamber using electrical contacts;
gradually increasing the power of said input signal; and

monitoring impedance of said electrical contacts to determine the voltage of said chamber; and

wherein an abrupt drop in peak-to-peak voltage of said chamber indicates detecting whether plasma leakage exists in said chamber by detecting an abrupt drop in peak-to-peak voltage of said chamber.

12. (Original) The method in claim 11, further comprising recording the power at which said abrupt drop occurred.

13. (Original) The method in claim 11, wherein said process of gradually increasing the power of said input signal comprises supplying one of a step ramped signal and a smooth ramped signal.

14. (Original) The method in claim 11, wherein said input signal comprises a radio frequency (RF) signal.

15. (Original) The method in claim 11, wherein said abrupt drop comprises a drop in said peak-to-peak voltage of greater than 5%.

16. (Original) The method in claim 11, wherein said plasma leakage comprises formation of a region of secondary plasma in a location different from a primary plasma formation location.

17. (Currently Amended) The method in claim 11, further comprising:
maintaining a history of power levels associated with an onset of plasma leakage
for each type of defect;
measuring a power level at which said abrupt drop in peak-to-peak voltage
occurred; and
correlating the said power level at which said abrupt drop in peak-to-peak voltage
occurred with a specific type of chamber defect maintained in said history.

18-20. (Canceled).

21. (New) A method of detecting abnormal plasma discharge in a chamber, said method comprising:
providing an input signal to said chamber, wherein said input signal comprises a ramped signal;
monitoring impedance of said chamber; and
detecting whether an abnormal plasma discharge exists in said chamber by detecting an abrupt change in said impedance.